

# PATENT SPECIFICATION

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DRAWINGS ATTACHED.

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## COMPLETE SPECIFICATION.

### Fabric for Sacks and Bags.

We, SAKAI KASEI KOGYO KABUSHIKI KAISHA, a corporation duly organized under the laws of Japan, of 13 Minamidori 4-chome, Nishinagahori, Nishi-ku, Osaka City, Japan, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 The present invention relates to a fabric for sacks and bags and more specifically, the present invention has for its principal object to provide a fabric for sacks and bags either woven of warp and weft consisting of  
15 fine, flat plastic strips or tapes made by cutting a material of small thickness in the direction of stretch after it has been extruded from an extruding machine, expanded, softened again by the application of heat and  
20 stretched in one direction to be formed into a thin film, or made by laying a layer of warp tapes and a layer of weft tapes cross-wise and bonding them together to form a sheet.

25 The additional object of the present invention is to provide a fabric constructed as above, having numerous projections dispersedly provided on its surface to act as a slip-resisting means.

30 The fabric in accordance with the principal object of the present invention has an advantage in that it has a high strength both lengthwise and breadthwise, making it hard to break and ensuring long durability, in spite of the fact that it is made of simple,  
35 untwisted flat strips or tapes as warp and weft.

40 The fabric in accordance with the additional object of the present invention has an advantage in that the numerous projections provided dispersedly on its surface act as a slip-resisting means to prevent sacks or bags,

made of this fabric and stuffed with goods, from collapsing when they were stacked high one upon another.

The nature and further advantages of the present invention, will be more clearly understood from the following description made with reference to the accompanying drawings, in which:—

Fig. 1 represents a plan view, partly in a stripped state, of a fabric for sacks and bags according to the inventions showing an embodiment in which it is made by laying warp and weft layers of plastic tapes cross-wise and bonding them together into a sheet form,

Fig. 2 represents a cross-sectional view of the fabric shown in Fig. 1,

Fig. 3 represents a plan view of a fabric according to the invention, showing another embodiment in which it is made by interweaving warp and weft tapes or strips into a woven fabric having a surface provided with slip-resisting projections,

Fig. 4 represents a cross-sectional view of the fabric shown in Fig. 3, and

Fig. 5 represents a cross-sectional view of still another embodiment of the invention, in which slip-resisting projections are formed on a sheet of plastics film prior to cutting.

Referring to the method of manufacturing flat plastic strips or tapes (1) to be used as warp and weft for the fabric in accordance with the present invention, a plastic material of small thickness as extruded from an ordinary extruding machine is expanded, softened again by the application of heat at temperatures below its melting point and stretched in a longitudinal direction by six to nine times the original length to be formed into a thin film, whereupon it is cut in the direction of stretch into a number of

fine, flat strips or tapes. The manufacturing process of the tapes is not shown in the drawings.

Now, referring to the drawings, there are two methods for manufacturing the fabric. According to one method illustrated in Figs. 1 and 2, a layer (A) of parallel-laid warp tapes (1<sup>1</sup>) and a layer (B) of parallel-laid weft tapes (1<sup>11</sup>) are laid each upon other cross-wise and bonded together at their contacting surface by means of a suitable synthetic bonding agent (C). According to the other method illustrated in Figs. 3 and 4, warp (1<sup>1</sup>) and weft (1<sup>11</sup>) are interwoven into a sheet of cloth like an ordinary woven fabric. In either case, warp and weft must be used in a flat state.

Referring to the modification which provides small round-shaped or spiniform projections (2) of synthetic resin innumerable and dispersedly on the surface of the aforementioned fabric constructed in accordance with the basic invention, there can be various methods of forming said projections (2). One of the methods, for example, is to apply lightly a synthetic bonding agent to the surface of the material cloth and simultaneously scatter grains of synthetic resin thereon to be fixed on the surface, which will act as a slip-resisting means.

Said projections (2) may be formed while the plastics film is in sheet form prior to preparation of fine, flat tapes. If a fabric is woven of the fine, flat tapes (1) obtained by cutting the film on which said projections (2) are formed, the projections (2) are laid in between layers of warp (1<sup>1</sup>) and weft (1<sup>11</sup>) as shown in the sectional view of Fig. 5, with the result that the warp and weft layers are tightly fixed together by the frictional force of these projections and its woven texture will not collapse due to the slipping of warp and weft.

The fine flat plastic tapes (1) to be used as warp and weft under the present invention have a very high tensile strength since the material film is given a heat-stretch treatment by which it is softened again by the application of heat and simultaneously drawn out in one direction to orientate the composite high-polymer molecules in the direction of stretch to form a longitudinal chain of the molecules and thereby imparting a remarkably high tensile strength thereto. Accordingly, a fabric composed of these tapes as warp and weft by cross arrangement is extremely strong both lengthwise and breadthwise. Also, as the sacks or bags

made of this fabric are strong both lengthwise and breadthwise and durable, they are quite suitably used as container bags not only for light-weight goods such as wool but also for heavier goods such as cereals, potatoes, fruits.

On the other hand, where sacks or bags are made of the fabric in which innumerable slip-resisting projections (2) are provided, the projections on the outer surface of individual bags are firmly interlocked one with another by the weight of the contents of bags, and accordingly, there is no risk that the stack of sacks or bags will collapse even when the sacks or bags are stacked high one upon another, thereby ensuring safety in handling.

#### WHAT WE CLAIM IS:—

1. A fabric for sacks and bags, made by interweaving fine, flat tapes or strips in a flat state as warp and weft, said tapes being comprised of heat-stretched plastics film obtained by cutting the plastics film in the direction of stretch after it has been extruded, expanded, softened again, and stretched.

2. A fabric for sacks and bags, made by laying a layer of parallel fine, flat tapes as warp layer and another layer of parallel fine, flat tapes as weft layer crosswise each upon other and bonding them together into one sheet of cloth, said flat tapes being comprised of heat-stretched plastics film obtained by cutting the plastics film in the direction of stretch after it has been extruded, expanded, softened again, and stretched.

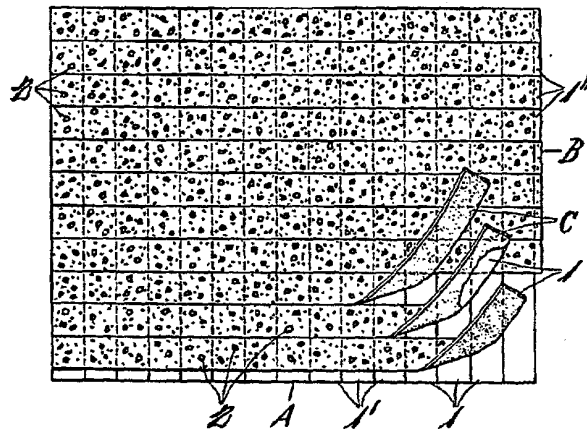
3. A fabric according to Claim 1 or 2, in which its surface is provided with innumerable dispersed projections made of synthetic resin attached thereto by means of a synthetic bonding agent.

4. A fabric according to Claim 1 or 2, comprising flat tapes as warp and weft, said tapes being comprised of heat-stretched plastics film obtained by cutting in the direction of stretch after the plastics film has been heat-stretched and provided on its surface with innumerable dispersed projections made of synthetic resin attached thereto by means of synthetic bonding agent.

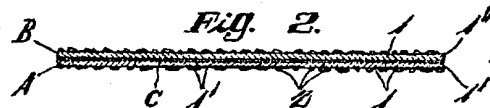
5. A fabric for sacks and bags substantially as hereinbefore described with reference to Figures 1 and 2 or Figures 3 and 4 or Figure 5 of the accompanying drawings.

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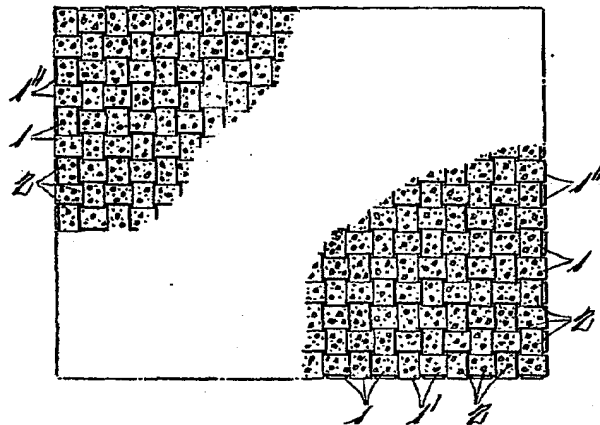
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



*Fig. 5.*

